Patent Claims

1. A method for determining the mass of a motor vehicle while taking different driving situations into consideration, involving an evaluation of a vehicle acceleration, wherein apart from a driving force of a vehicle drive unit, resistance forces resulting from rotational forces, air resistance, rolling resistance and the slope descending force are taken into consideration,

wherein a braking force is also taken into consideration.

2. The method of claim 1, wherein

a plurality of different driving situations are evaluated,

individual mass evaluation results from each of the plurality of driving situation evaluations are stored, and

the stored individual mass evaluation results are combined into a collective mass value.

3. The method of claim 2, wherein

when determining the collective mass value, different driving situations are weighted differently.

4. The method of claim 1, wherein

for taking the slope descending force into consideration, a roadway inclination is determined by determining, by means of at least one longitudinal acceleration

sensor installed in the vehicle, an acceleration occurring in the horizontal direction and by relating it to the acceleration occurring in the roadway direction.

5. The method of claim 2, wherein

for taking the slope descending force into consideration, a roadway inclination is determined by determining, by means of at least one longitudinal acceleration sensor installed in the vehicle, an acceleration occurring in the horizontal direction and by relating it to the acceleration occurring in the roadway direction.

6. The method of claim 3, wherein

for taking the slope descending force into consideration, a roadway inclination is determined by determining, using at least one longitudinal acceleration sensor installed in the vehicle, an acceleration occurring in the horizontal direction and relating the acceleration in the horizontal direction to an acceleration occurring in the roadway direction.

7. The method of claim 4, wherein

a vehicle body pitch angle is taken into consideration.

8. The method of claim 1, wherein

the braking force is estimated from operating data from a brake system installed in the vehicle.

9. The method pursuant to claim 8, wherein

the braking force is determined from a braking pressure and an estimated coefficient of friction between a brake lining and a brake disc.

10. The method of claim 8, wherein

only braking operations without notable slippage between tires and roadway are taken into consideration.

11. The method of claim 9, wherein

only braking operations without notable slippage between tires and roadway are taken into consideration.

12. The method of claim 1, wherein

the braking force is determined from a comparison of a path traveled during a braking operation.

13. The method of claim 4, wherein

at least one of the roadway inclination and the path traveled during a braking operation is determined from a vehicle navigational system.

14. The method of claim 1, wherein

detectable offsets are corrected.

15. The method of claim 1, wherein

plausibility controls are provided.

16. A method for determining the mass of a motor vehicle, comprising the steps of:

determining a vehicle acceleration;

determining vehicle forces, wherein the vehicle forces include

a driving force of a vehicle drive unit,

resistance forces resulting from rotational forces, air resistance, rolling resistance and the slope descending force are taken into consideration, and

a braking force; and

dividing the vehicle forces by the vehicle acceleration to obtain a vehicle mass value.

17. The method of claim 16, further comprising the steps of:

obtaining a plurality of vehicle mass values from a plurality of driving situations;

storing each of the plurality of vehicle mass values, and

determining a collective mass value from the stored plurality of vehicle mass values.

18. The method of claim 17, wherein

in the step of determining the collective mass value, vehicle mass values obtained in different driving situations in the plurality of driving situations are weighted differently.

19. The method of claim 16, wherein

in the step of determining vehicle forces, the slope descending force determination includes determination of a roadway inclination from a relationship between an acceleration in the roadway direction determined by at least one longitudinal acceleration sensor installed in the vehicle, and a component of the acceleration in the roadway direction normal to a gravity direction.

20. The method of claim 19, wherein

the component of the acceleration in the roadway direction normal to a gravity direction is determined from a satellite-based navigation system.

21. The method of claim 17, wherein

in the step of determining vehicle forces, the slope descending force determination includes determination of a roadway inclination from a relationship between an acceleration in the roadway direction determined by at least one longitudinal acceleration sensor installed in the vehicle, and a component of the acceleration in the roadway direction normal to a gravity direction.

22. The method of claim 18, wherein

in the step of determining vehicle forces, the slope descending force determination includes determination of a roadway inclination from a relationship between an acceleration in the roadway direction determined by at least one longitudinal acceleration sensor installed in the vehicle, and a component of the acceleration in the roadway direction normal to a gravity direction.

23. The method of claim 19, wherein

a vehicle body pitch angle is considered in determining the slope descending force.

24. The method of claim 16, wherein

the braking force is estimated from operating data from a brake system installed in the vehicle.

25. The method pursuant to claim 24, wherein

the braking force is determined from a braking pressure and an estimated coefficient of friction between a brake lining and a brake disc.

26. The method of claim 24, wherein

the operating data from the braking system is obtained when braking without slippage between vehicle tires and the roadway.

27. The method of claim 25, wherein

the operating data from the braking system is obtained when braking without slippage between vehicle tires and the roadway.

28. The method of claim 16, wherein

the braking force is determined from an evaluation of a path traveled during a braking operation.

29. The method of claim 19, wherein

at least one of the roadway inclination and the path traveled during a braking operation is determined from a vehicle navigational system.

30. The method of claim 16, wherein

detectable offsets are corrected prior to obtaining the vehicle mass value.

31. The method of claim 16, wherein

plausibility controls are provided.